OCTOBER, 1917

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The Electrical Experimenter

POPULAR ELECTRICAL NEWS ILLUSTRATED

FIRING ELECTRIC BOMBS

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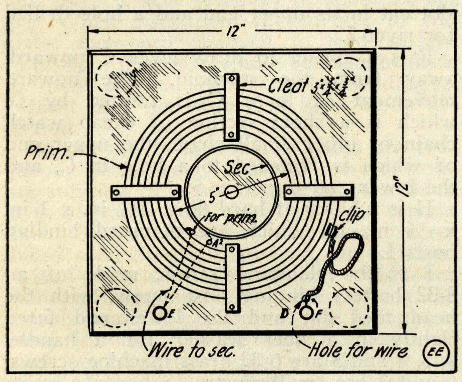
LARGEST CIRCULATION OF ANY ELECTRICAL PUBLICATION

CONSTRUCTING A ¼ K.W. HIGH FREQUENCY OUDIN COIL.

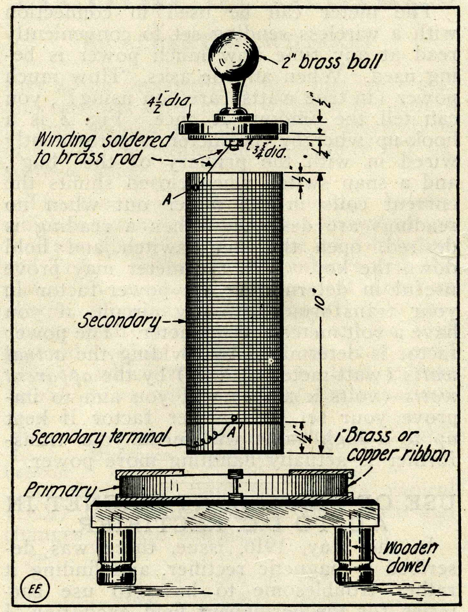
By George Sutton, Jr.

FIRST I procured a card-board tube in which a Pyrene fire extinguisher was packed, at a local auto supply store.

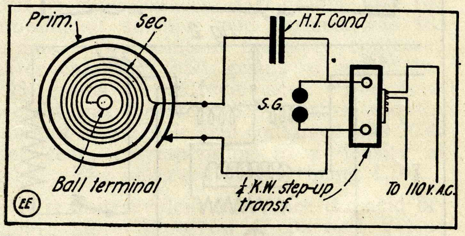
MANY experimenters have frequently used storage batteries but have possibly never stopt to inq Then I constructed the wooden heads; they may be turned up on a lathe or with a compass saw if no lathe is available. One head measures 4½ in. in diameter and the other head 3¾ in. in diameter. The smaller head is eventually fastened to the base to hold the cylinder in place. I turned the top head, which is made all in one piece as shown, and put the heads on the cylinder and mounted it between the centers of my lathe. The cylinder was wound with one layer of No. 26 enameled magnet wire, between the turns of which I wound a layer of heavy linen thread to separate the turns. I started ½ in. from the top and finished 1¼ in. from bottom; this will take about eight hundred turns. Two holes are punched, one at A and one A^1. The top turn is run thru the hole A, and connected to the brass ball on top; the bottom turn is run thru hole A^1 and thru hole A^2 and connected to binding post E. After the cylinder is wound it is necessary to coat it thoroly with several coats of shellac, as this prevents the sparks from jumping between turns and also holds the wire in place. Now comes the base; I used a piece of yellow pine 12 in. square, ¾ in. thick, then gave it several coats of black asphaltum paint. The brass ball may be obtained from a bed-post or may be purchased from a local hardware dealer. The secondary cylinder was put in place, the bottom turn of secondary connected with binding post E, and the top turn connected with the brass ball. I then constructed the primary; first I took a ring of card-board 5 in. inside diameter and 1 in. wide and fastened one end of the brass tape by binding it with friction tape. The primary is made of 8 or 9 turns of 1 in. brass or copper ribbon separated by a layer of corrugated card-board. When the primary is completed it is bound by winding some friction tape around the outside; the inside turn of primary is also connected to binding post; this flexible wire has a clip attached to it and is connected to binding post D, and run thru hole F, so as not to interfere with making connections with as many turns of the primary as may be needed. Four standard porcelain insulators are used for feet. Sparks from 8 to 12 in. long can be drawn from this Oudin transformer when excited by ¼ K. W. wireless transformer.



Plan View of Small High Frequency Coil of the Oudin Type.



Details of Small Oudin Coil Suitable for Use with ¼ K.W. Step-Up Radio Transformer or 6 to 8 Inch Spark Coil.



Connections for Oudin Coil, Showing How the Secondary and Primary Windings Are Connected Together.

Trials of a Troubleshooter

By THOS. W. BENSON

HAVE you ever indulged in that great indoor sport of "trouble-shooting." Especially that brand of trouble that infests the network and web of a telephone system in a large town. NO?

Never stood by when a cable "blows up"; when pair after pair goes bad? Never held your breath as that infernal meter on the test table swings over and in its cold, impersonal way quietly shows "dead pairs," "shunts," "opens," "grounds," and what not, knowing meanwhile that you are going out to shoot the said trouble? Great life! Take it from your Uncle Dudley.

Paradise, according to the late Elbert Hubbard, is a town with only one telephone system. Perhaps so, but you can stake your last jitney against a cancelled postage stamp that the said system keeps the recording angel busy at times, even more so when old Jupe Pluvius lets drive with a rain storm.

But there are some troubles that seem to have no rhyme or reason. This is the case when transmission is poor. There are several million different things that can cause this and the majority are not in the text book. It is simply a case of pulling wires and tightening screws till the trouble goes off.

For instance, a certain 'phone goes bad and you jump over to see what the "bug" is. But, curses, the instruments test O.K. The cord seems to have a light shunt on it so you put in a new cord. But behold, next day the same 'phone is on your bogey with the same trouble. An examination shows that the cord is at fault again. And that was a perfectly good cord when put in a few hours before. Well, we will put another one in and see how that works. Test table reports clear and away you go.

But, the next day sees you back at the old stand. Now what in the name of a bald-headed South African flea is wrong? The cords look perfect, not wet or spotted. (It is practically impossible to pick up a single wet spot on a cord.) A new cord and the 'phone is reported clear. Yes, you are now shooting trouble with a great big "T."

Perhaps this will continue till you happen in on the 'phone and find that blamed pet poddle snapping at the cord. Yep, those toy hounds can wet that cord sufficiently by biting on it till the relay at central drops over and flashes up on the board.

Of course you can't warn the dog off, but you would be surprised at the number of times you have to warn off the "PEEPUL." They seem to think that a telephone cord makes a good washline to dry handkerchiefs, or support wet umbrellas, or use it for a pincushion. I suppose it does take all kind of people to make up our old planet. Sometimes they decide to shorten the cord and use a safety pin for the purpose. Of course that means a call from the 'phone Doctor who has to operate and remove the obstruction from the path of speech.

But, as in the previous case obstructions do not always stand up and holler at the "Doc." No indeed not; take the case of the "Mysterious Shunt."

Tests from the table showed that a perfect shunt existed on a certain 'phone. On arriving the troubleman took down the receiver and found everything O. K. No shunt or anything else seemed to be in that vicinity. The test table swore that was the 'phone reported in, but now it tested clear.

But it came to pass, as the stories go, that an equally good short made itself apparent the following day. Again there was no trouble when "Doc" arrived. "The man is crazy," was his diagnosis of the trouble. And still it came and went, on one day, clear for a while, then on again. Pairs were changed at the cable box. "Hah, faulty pair," was the troubleman's exultant exclamation, as the 'phone was clear for several days. But—that shunt still hung around and dropt on after a week.

"Doc" made up his mind he would kill that trouble or stay there the rest of his days. He fust around, asked for a ring that meant something and finally noted that the shunt would go on as soon as the 'phone was called and drop off later. This looked like a case of renewing the fuses in the lightning arrester and he started up to see if they were faulty. Having looked at these previously they were alright, but on this day he noted the fact that a new curtain had been hung over the window above which the lightning arrester was located. And said curtain had a brass rod that just about touched the ends of the fuses. When a ring came it would jump thru the lacquer on the rod and short-circuit the line and mate; the least little vibration would then break the circuit and the line cleared up. Yes, you could almost count the number of rings

(*Continued on page 427*)